

NOTES ON NORTH AMERICAN MUTILLIDAE I.  
SOME NEW SPECIES OF ODONTOPHOTOSIS.

By RUDOLF M. SCHUSTER, University, Miss.

In the process of completing certain investigations of the morphology and phylogeny of the Sphaerophthalmine complex of the Mutillidae, the writer has come into contact with a number of new species belonging to this group. Since it is not feasible to publish descriptions of these new species in Part II of the author's "A revision of the Sphaerophthalmine Mutillidae of America north of Mexico" in conjunction with the morphological discussion, these descriptions are herewith separately published. For a more detailed discussion of the interrelationships of the two species of *Odontophotopsis* that are published here, the succeeding parts of the writer's work on the Sphaerophthalmine Mutillidae of America north of Mexico should be consulted.

*Odontophotopsis* (*O.*) *biramosa* n. sp.

*Male*: Length 12.5 mm. Body almost uniformly testaceous, with a moderate vestiture of simple and subplumose to plumose hairs; legs and antennae concolorous; sculpture moderate to weak.

Head in dorsal (posterior to clypeus) rather distinctly transversely rounded-rectangular, excluding the moderately strongly bulging eyes, the dorsum with small, distant, setigerous punctures, the integument therefore rather highly polished, the punctures somewhat denser but still separated on the lower front, above the scrobal teeth and anterior to median ocellus; vertex behind eyes parallel for a short distance, behind which the head is evenly rounded into the subtruncate-arcuate posterior aspect of head; head width including eyes 2.70 mm.; width of vertex directly behind eyes 2.33 mm.; length of head from interantennal sinus to occipital ridge 1.88 mm.; length of vertex behind eyes 0.85 mm.; width of front between eyes 1.35 mm. (exactly 0.50 the head width). Eyes rather large and protuberant, polished, their length 1.04 mm. (the front 1.3 the eye-length). Ocelli large, salient, the posterior 0.38 mm. long; ocellocular distance 0.54 mm. (1.42 ocellar length; 0.52 the eye-length); interocellar distance 0.50 mm. (slightly narrower than ocellocular distance). Clypeus highly modified, at median base elevated in a strongly arched, sharp transverse ridge, produced as a hood-like or shortly nasutiform process over the clypeus, the anterior portion of it strongly con-

cave; clypeus distally produced into a trapezoidal broad, narrowly truncate lobe, the truncation broadly, shallowly emarginate; anterior fourth of clypeus rather densely setigerously punctate and punctulate, with a short beard of subdecumbent, fine hairs and some longer, sparser, setose hairs near middle of anterior margin. Mandibles extraordinarily grotesque, strongly dorsiventrally dilated and with sharp, strongly arcuate, carinate dorsal rims that end in the large, bladeliike dorsal tooth; ventral margins interrupted near base by a large protruding ventral tooth (length of ventral margin to apex of tooth 0.54 mm.; width at ventral tooth 0.38 mm.); beyond which the mandibles are strongly constricted and incised ventrally, and sinuously narrowed dorsally, the maximum width of external face at incision merely 0.18 mm. (less than 0.5 width at tooth); from point of incision on the mandible strongly dilated, bladeliike, becoming 0.53 mm. wide shortly before the margin; the dilated distal portion of the mandible biramose, divided into a large dorsal tooth, separated by a deep, semilunate sinus from the very large, acute ventral tooth, at whose inner base is a small, but sharply produced median tooth; the mandibular apex therefore tridentate with the dorsal tooth separated from the pair of ventral teeth by a deep, rounded sinus; basal half of mandibles strongly, closely, setigerously punctate, the distal third of mandibles with only a very few setose punctures, polished, thin and bladeliike. Antennal scrobes nitid, armed above with a distinct tubercle but no distinct suprascrobal ridges. Scape circa 1 mm. long, with an obscure ventral ridge and otherwise setigerously punctate surface; pedicel 0.15 mm. long, broader than long; first flagellar segment 0.46 mm. long; second flagellar segment 0.57 long  $\times$  0.24 mm. in diameter.

Alitrunk testaceous, moderately coarsely and quite completely, closely sculptured, with a moderate vestiture of simple to subplumose white hairs. Pronotum dorsally with contiguo-confluent, moderately coarse, moderately shallow puncturation, but the lateral faces plane, largely impunctate (except for microscopic setigerous punctulations), nitid, anteriorly margined by a delicate humeral vertical carinule; epaulets quite distinct on humeri and lateral corners. Mesoscutum with quite coarse, distinctly separated to widely separated, sharply defined, deep, circular, setigerous punctures, the flat intervals nitid; notaulices unusually well developed (for *Odontophopsis*), complete but shallow and obsolete about one-fourth from anterior margin of scutum; scutellum and axillary lobes with contiguo-confluent, coarse, more shallow sculpture than

scutum. Mesopleura with anteroventral regions, and a large area above middle coxae and along metapleural border nitid and impunctate, except for scattered, microscopic, setigerous punctulations; oblique furrow well-developed, broad, gutter-like, nitid and impunctate, the coarsely and contiguously punctured dorsal and posteroventral regions of mesopleura therefore separated and not confluent. Mesosternum largely obscurely rugose, not clearly punctate except near mesopleural borders, somewhat shining, armed at anterior border of the swollen posterior half with a pair of very large, sharp, tapering, closely approximated spur-like processes, the sinus between the spurs very narrowly V-shaped (width at apex much less than height of processes); anterior face of processes vertically declivous, posterior faces somewhat gradually fused with mesosternum and less swiftly declivous. Metasternum with

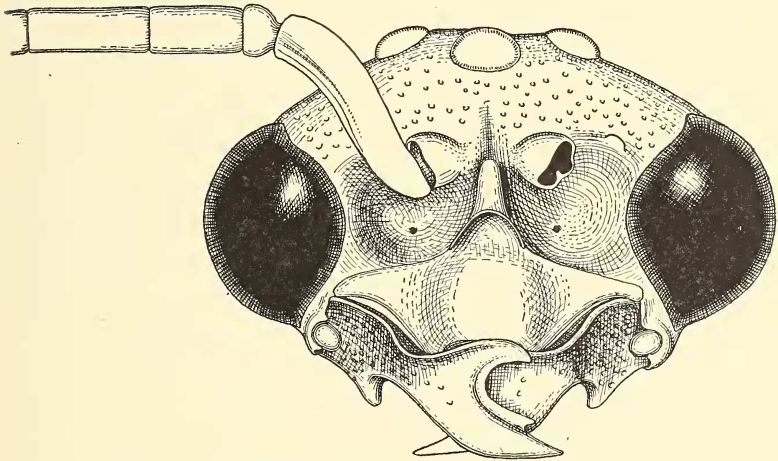


Fig. 1. *Odontophotopsis biramosa*, type; frontal view of head.

a rather high, transverse, anterior ridge between and in front of hind coxae, produced at each end into a low tooth, but not distinctly dentiform medially. Propodeum coarsely reticulate with moderately deep reticulations, at base somewhat more coarsely areolate-reticulate, but without trace of a pair of rectangular areoles; lateral propodeal faces similarly, but less coarsely reticulate almost to the anterior margin, merely a narrow, anterior, propodeal border nitid and flat; the propodeal sculpture therefore not extending onto metapleura (the latter nitid and impunctate, except for about six coarse, reticulate punctures on lower portion, which

are distinctly separated by a nitid gutter from the propodeal sculpture). Legs quite unmodified, stramineous to concolorous with body, with moderate white vestiture; calcaria 1-2-2, scarcely paler than legs. Wings hyaline, with yellow veins and stigma; stigma 1.12 mm. long, moderately small; marginal cell relatively large, acute distally, 1.50 mm. long on costal margin; cell  $R_5$  irregularly pentagonal-rectangular, obliquely truncate distally, 1.10 mm. long; distance of stigma from bifurcation of  $R + M$  0.75 mm.

Gaster concolorous with alitrunk, testaceous. Petiole moderately nodose and rather slender, moderately constricted dorsally at apex, dorsally with moderate, separated, setigerous punctures, laterally and basally with contiguous to confluent, moderately coarse puncturation; apex with a thin fringe of plumose decumbent hairs, otherwise with pilose, erect, sparse, simple hairs. Tergum two with disk highly polished, distantly, setigerously punctulate, the base and lateral margins with moderate, slightly distant to close, setigerous punctures; at apex closely, setigerously punctate and punctulate, with a dense band of plumose hairs. Sternum two at base with a short, subectate, longitudinal keel, the basal third elsewhere coarsely, closely punctate to rugose-punctate, the distal half or more with progressively more widely spaced and smaller setigerous punctures, highly polished; apical band of plumose hairs well developed; sublateral felt lines reduced to minute tufts, less than 1/10 the length of tergal felt lines. Segments 3-6 with apical thick fringes of plumose hairs and sparse, erect, pilose, simple hairs, all white, arising from minute, scattered punctures, between which the distinct intervals are faintly shagreened. Pygidial segment with a basal "band" of close, setigerous punctures, narrowed and interrupted medially (thus reduced to two lateral triangular regions), the integument elsewhere nitid, impunctate, except for apical and subapical fringe of minute setules arising from distal band of minute punctulations, a laterally defined pygidial area therefore absent. Hypopygium elongate, narrowly triangular, narrowly rounded at slender apex, slightly convex and rounded laterally, the disk with widely spaced, minute, setigerous punctures becoming slightly closer and coarser laterally.

*Holotype*: Holtville, California. July 2, 1929 (Paul W. Oman), in collection of United States National Museum.

This unique species is closely related only to the following species, *O. setifera*. It shares with that species a biramose mandibular apex, and a strong ventral incision (and subtending tooth). A similar biramose mandible does not recur again anywhere

among North American Mutillidae. Other diagnostic characters are the large, closely approximated anterior mesosternal spurs (much as in the species of the *O. inconspicuous-venustus* group), the modified mesopleura, with the oblique furrow very broad and well-marked, highly polished, the virtually complete notaulices, and the minute, tuft-like felt lines of the second tergum. The small stigma, elongate marginal cell, the carina of the base of the second sternum, and the nitid, undefined pygidium are also strongly differential characteristics; all shared with the next species.

The species differs from *setifera* at once in the sharply elevated, slightly hood-like produced dorsal median base of the clypeus, and in the lack of a short, stiff, equally long, brush-like vestiture of the clypeus. The ventral half of the mandibular apex is also merely bidentate: no small, third tooth being evident (in *setifera* clearly tridentate obliquely, hence with four mandibular apical teeth). In *biramosa* the mesosternum has the simple processes separated by a narrow sinus, much narrower than the height of the processes; in *setifera* the processes are separated by a broadly U-shaped sinus, much wider than the processes are high, and there is, in addition, a small spur immediately behind each of the large anterior spurs (i.e., the mesosternum is quadrispinose). There are numerous other differentiating characters of a minor nature, and the two species are clearly abundantly separated by many characters, being allied chiefly by the very anomalous mandibular form.

#### **Odontophotopsis (*O.*) *setifera* n. sp.**

*Male*: Length 14 mm. Integument uniformly pale-testaceous, with a moderately dense vestiture of white simple and plumose hairs.

Very similar in facies and general characters to *O. biramosa*. The head transversely rectangular-rounded (excluding the strongly bulging eyes), the vertex behind the eyes subparallel and scarcely convergent for a short distance, then rather swiftly rounded into the slightly arched, subtruncate posterior aspect of the head; integument highly polished, distantly setigerously punctulate, the front with the punctulations no coarser, scarcely less distant than on vertex. Head width 3.05 mm.; width of vertex immediately behind eyes 2.56 mm.; length of head from interantennal sinus to occipital ridge 2.12 mm.; vertex behind eyes 1.00 mm. long. Eyes extremely large and strongly bulging, 1.13 mm. long, shortly ovate; front between eyes 1.60 mm. Ocelli large, bulging, the length of posterior 0.41 mm.; ocellocular distance

0.56 mm.; interocellar distance exactly equal to ocellocular distance; distance to anterior ocellus 0.23 mm. Clypeus anomalous, the entire posterior two-thirds obscured by a dense "beard," formed of short, stiff, abruptly terminated (and almost clavate) seta, forming a dense brush; clypeal base elevated obscurely, medially as a rounded low tubercle slightly higher than the front behind it, almost hidden by the dense setose vestiture; clypeus strongly anteriorly declivous, in front of basal tubercle, strongly depressed below dorsal mandibular rims and forming a deep basin with them; anterior part of clypeus drawn out as a narrowly trapezoidal, prominent median lobe, narrowly truncate-retuse at apex, and only 0.50 mm. wide at apex, the corners of the truncation spiniform, acutely produced; anterior clypeal lobe with a distal row of setae, forming a slight beard of sparse, long, arched setae, otherwise nearly impunctate and nitid (in strong contrast to the densely setose region posterior to it). Mandibles as in *biramosa*, but the ventral branch of the apex distinctly tridentate: thus the mandible quadridentate distally. Antennae and antennal scrobes identical with those of *biramosa*.

Alitrunk as in *biramosa*, the lateral pronotal faces similarly plane, even more polished and less punctulate, delicately margined anteriorly. Mesopleura even less coarsely sculptured, and with sculpture more restricted; the entire anterior halves, except for dorsal limited region, nitid, flat, almost impunctate (except for sparse, scattered, minute, setigerous punctulations); oblique furrow broad, not very deep, quite distinct; limited dorsal area and posteroventral region (on inflated part of mesopleura), with moderately coarse, rather regular punctures, much less coarsely sculptured than in *O. biramosa*. Mesosternum anomalous: the anterior processes slightly less strong than in *biramosa*, not closely approximated (separated by a broadly U-shaped sinus distinctly wider than processes are high), the large anterior processes each with a smaller spur directly behind them. Scutellum with the round, contiguous punctures much smaller than in *biramosa*. Propodeum reticulate, with four moderate basal areoles conspicuously larger than surrounding reticulation; reticulations so oriented as to form a sharp row on each side, separating dorsal from lateral faces, the longitudinal ridges forming a more or less distinct longitudinal carinule on each side; lateral propodeal faces therefore rather distinctly separated from dorsal; lateral faces with sculpture limited, bearing only a single row of reticulations, adjacent to posterior face, the reticulations rather small, not extending near to meta-

pleural border, a large, broad anterior portion of lateral faces nitid, flat, impunctate, continuous with the nitid metapleura (which lack all but a few vestigial punctures that occur ventrally). Legs as in *biramosa*. Wings as in *biramosa*, but stigma larger (compared with distance from bifurcation of R + M); stigma 1.35 mm. long; distance from bifurcation of R + M 0.50 mm. (merely 0.37 length of stigma); marginal cell elongate, acute distally, 1.65 mm. long on costal margin;  $R_5$  rectangular-pentagonal, 1.30 mm. long.

Abdomen as in *biramosa*, but petiole subsessile, scarcely constricted distally and much broader, less closely punctured (dorsally with distinct, ill-defined punctures), at apex with fine plumose pubescent band; second sternum very distantly, finely punctulate, highly polished, except laterally, where with distant coarser punctures, the base unusually weakly punctulate and nitid; median part of base with a tectate short keel; lateral felt lines short but conspicuous tufts. Hypopygium with central part of disk impunctate, nitid, the distal part of lateral margins with a group of close, setigerous punctures, bearing a small tuft of brownish, stiffly setose hairs.

*Holotype*: Palms to Pines Highway, Riverside County, California, 1,000 feet elevation, May 28, 1940 (Bohart), in collection of author.

*Paratype*: Ehrenberg, Arizona, April 29, 1939 (F. H. Parker), in collection of University of Minnesota.

This species is anomalous in the biramose, quadridentate mandibles, and in the brush-like development of the clypeal vestiture. The two characters at once separate the species from all other North American Mutillidae. The mandibular form allies it to *biramosa*, in which the lower branch of the mandibular apex is only bidentate (clearly tridentate in *setifera*), and in which the clypeus is very different (compare descriptions). Other features that separate *setifera* from *biramosa* are: 1) the quadridentate mesosternal armature, with the distance between the processes of each side much greater; 2) the very weakly punctulate base of the second abdominal sternum of *setifera*; 3) the tuft of brownish, long, stiff setae of the lateral corner of the distal portion of the hypopygium; 4) the largely reduced sculpture of the lateral propodeal faces; 5) the larger stigma, compared to the distance from bifurcation of R + M; 6) the more distinct sternal felt lines. Other differences are cited under *biramosa*.